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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,127	02/26/2004	Russell Charles Ide	RID0022-US	1869

7590 05/18/2006

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EXAMINER
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NGUYEN, NINH H

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/786,127	IDE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ninh H. Nguyen	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-26 and 33-40 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10, 15-18 and 27 is/are rejected.
- 7) ☒ Claim(s) 4, 11-14 and 28-32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>06/28/04</u> .  | 6) <input type="checkbox"/> Other: ____.                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 7, 8, 10, and 15-17 are rejected under 35 U.S.C.102(b) as being anticipated by Hopkins et al. (3,567,504).

Hopkins discloses a bearing runner (Figs. 1-6) comprises a core layer 26 (Fig. 6); and a wear layer comprises polyimide affixed to the core layer (col. 7, line 68- col. 8, line 2);

wherein the runner further comprising at least one porous bronze layer affixed to the core layer on a side of the runner opposite the first polymer layer (col. 8, lines 3-11);

wherein the core layer defines a recess 34 in which the wear layer is disposed;

3. Claims 1 and 8-10 are rejected under 35 U.S.C.102(b) as being anticipated by Aguilar et al. (6,017,184).

Aguilar discloses a bearing runner (Fig. 6) comprises a core layer and a wear layer (Nituff coating; col. 3, lines 51-56) affixed to the core layer;

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wherein the core layer defines a recess in which the wear layer is disposed (the rectangular groove in Fig. 6);

wherein the recess comprises an under cut (the rectangular groove in Fig. 6); and

wherein the wear layer protrudes from the recess above the core layer (coating over the substrate of the recess).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C.103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheever et al. (5,718,516) in view of Hopkins et al.

Cheever discloses a metallic motor spindle comprising a bearing runner 26 having core layer (Fig. 1) made of bronze or steel (col. 3, lines 62-65). However, Cheever does not disclose a wear layer affixed to the core layer as claimed.

Hopkins teaches a solid lubricant layer 50 comprises polyimide to be bonded on an outer surface of a shaft which constitutes a bearing assembly (Fig. 7; col. 9, lines 8-17); wherein the substrate of the shaft further comprising porous bronze to facilitate bonding of the solid lubricant to the surface of the shaft (col. 8, lines 8-11).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to make the thrust bearing assembly of Cheever with surfaces of the runner

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of the bearing assembly coated with a solid lubricant comprising polyimide for the purpose of providing a bearing assembly that can operate over extended periods of time and under extremely adverse operating conditions as taught by Hopkins (col. 9, lines 36-48).

6. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheever et al. (5,718,516) in view of Hopkins et al.

Cheever discloses a bearing and runner assembly (Fig. 1) comprises a bearing comprising at least one bearing pad 32; and a runner 26.

However, Cheever does not disclose the runner comprising a first layer comprising a core material and a second layer comprising a polymer coating affixed to the first layer, wherein the at least one bearing pad is adapted to contact at least a portion of the second layer as claimed.

Hopkins teaches a solid lubricant layer 50 comprises polyimide to be bonded on an outer surface of a shaft which constitutes a bearing assembly (Fig. 7; col. 9, lines 8-17); wherein the substrate of the shaft further comprising porous bronze to facilitate bonding of the solid lubricant to the surface of the shaft (col. 8, lines 8-11).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to make the thrust bearing assembly of Cheever with surfaces of the runner of the bearing assembly coated with a solid lubricant comprising polyimide for the purpose of providing a bearing assembly that can operate over extended periods of time and under extremely adverse operating conditions as taught by Hopkins (col. 9, lines 36-48).

Regarding claim 18, Cheever in view of Hopkins discloses all the limitations except the bearing does not comprise uncoated hardened steel as claimed.

An official notice is taken that spindles of motors are commonly made of hardened steel for the purpose of prolong the life of the spindle since steel is mechanically strong and elastic.

7. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy et al. (6,565,257) in view of Hopkins et al.

Kennedy discloses a submersible pump system comprising a multi-stage centrifugal pump; and a motor coupled to the multi-stage centrifugal pump, the motor comprising a shaft coupled to the multi-stage centrifugal pump, a rotor having a thrust bearing, and a first runner affixed to the shaft, the runner comprising a core layer facing the thrust bearing.

However, Kennedy does not disclose the runner further comprises a first wear layer affixed to the first core layer, wherein the first wear layer faces the thrust bearing as claimed.

Hopkins teaches a solid lubricant layer 50 comprises polyimide to be bonded on an outer surface of a shaft which constitutes a bearing assembly (Fig. 7; col. 9, lines 8-17); wherein the substrate of the shaft further comprising porous bronze to facilitate bonding of the solid lubricant to the surface of the shaft (col. 8, lines 8-11).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to make the submersible pump system of Kennedy with the surfaces of the runner of the bearing assembly coated with a solid lubricant comprising polyimide for the purpose of providing a bearing assembly that can operate over extended periods of time and under extremely adverse operating conditions as taught by Hopkins (col. 9, lines 36-48).

***Allowable Subject Matter***

8. Claims 19-21, due to the limitation of the polymer layer forms a plurality of spaced bearing pads to provide a bearing that rotates with the runner, are allowed.
9. Claims 22-26, due to the limitations of a runner comprising a polymer coating affixed to a first side of the runner and individual bearing pads on a side of the runner opposite the first side, are allowed.
10. Claims 33-40, due to the method steps of removing a surface layer of the runner to expose a core substrate; applying a wear layer to the core substrate; and reattaching the runner to the shaft, are allowed.
11. Claims 11-14, and 28-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Prior Art***

The prior art made of record but not relied upon is considered pertinent to applicant's disclosure and consists of 2 patents.


Haynes et al. (5,509,738) and Gorlach (7,001,077) are cited to show different bearing components coated with polyimide.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ninh Nguyen whose telephone number is (571) 272-4823. The examiner can be normally reached on Monday-Friday from 7:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached at (571) 272-4820. The fax number for this group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, please go to <http://pair-direct.uspto.gov> or contact the Electronic Business center (EBC) at 866-217-9197 (toll-free).

  
NINH H. NGUYEN  
PRIMARY EXAMINER

Nhn  
May 15, 2006